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CONTENTS

A Factor Analysis of Student Ratings of Psychology Instructors on the Purdue Scale 385
A. W. BENDIG

Validity of Teachers' Ratings of Adolescents' Adjustment and Aspirations 394
DAVID P. AUSUBEL, HERBERT M. SCHIFF, AND MAJORIE P. ZELENY

An Experiment in Ninth-grade Reading Improvement 407
ROBERT F. BARRY AND PAUL E. SMITH

The Psychological Prerequisite to Educational Psychology 415
ROY GLADSTONE

An Experimental Study of the Reading-rate Controller 421
GEORGE F. WOOSTER

Relationships between Eight Variables and F-Test Scores of Teachers . 427
H. H. REMMERS AND MARTIN STEINBERG

Hostility: An Educational Paradox 432
HARRY A. GRACE

Book Reviews 436

Publications Received 446

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(Continued on Inside Back Cover)

THE JOURNAL OF

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A FACTOR ANALYSIS OF STUDENT RATINGS OF PSYCHOLOGY INSTRUCTORS ON THE PURDUE SCALE

A. W. BENDIG

University of Pittsburgh

In a previous study of the use of student rating scales as diagnostic and evaluative instruments to assess instructional effectiveness at the college level it was suggested that ratings from scales that are highly interrelated might be combined to yield a fewer number of indices of teaching proficiency that would be more reliable than single scale ratings (*1*). Coffman (*4*) presents a similar point of view, arguing that a multiplicity of single scales presents difficulties in interpretation. In addition, results have indicated that a simple summing of ratings from different scales, without consideration to varying intercorrelations among pairs of scales, can obscure important information. The residual variance remaining in achievement grades in a course in introductory psychology after the variability attributable to academic aptitude had been eliminated was shown to be significantly related to certain single scales on the Miami Instructor Rating Sheet and to be unrelated to others. A simple combining of the ratings resulted in a loss in the relationship between student ratings and residual achievement (*7*).

Several methods could be used to combine ratings from different scales. One would be to combine scales that rationally appear to measure different facets of a single broad characteristic. The results mentioned above (*7*) suggested a combining of scales measuring only characteristics of the course and a similar combining of scales related to characteristics of the instructor. A simple summing of these two types of scales was used in a study of the rela-

tionships between course achievement in introductory psychology and ratings of the course and of the instructor (*2*). A better method of combining scales would stem from a factor analysis of the intercorrelations of the scales. Such a procedure should lead to a minimum number of factorially pure and possibly orthogonal measures of teaching effectiveness as seen by the student. The present paper is a report of the results of such an approach to combining scales on the Purdue Rating Scale for Instruction.

PROCEDURE

The basic data were the mean ratings of eleven introductory psychology instructors on the first ten scales of the Purdue Rating Scale for Instruction. These instructors had been rated by their students during the Spring and Fall semesters of 1951. The number of student raters varied from seventeen to ninety-eight, with the mean being 42.8. Detailed information on the norms derived from these ratings, including reliabilities of the individual scales, can be found in a previous report (*1*).

The interrelationships among the ten scales were found by computing product-moment correlation coefficients between the eleven mean ratings on each scale. These correlations can be found in Table 1. This matrix of intercorrelations was factor analyzed by the centroid technique outlined by Cattell (*3*, pp. 51–59) and the extraction process replicated four times to stabilize scale communalities. On the fourth iteration the mean of the absolute differences between estimated and obtained communalities was

TABLE 1.—INTERCORRELATIONS (DECIMAL POINTS OMITTED) OF MEAN RATINGS OF ELEVEN INTRODUCTORY PSYCHOLOGY INSTRUCTORS ON THE PURDUE RATING SCALE FOR INSTRUCTION

P.R.S.I. Scale	2	3	4	5	6	7	8	9	10
1	16	21	30	79	63	59	20	32	66
2		67	54	43	66	17	83	64	40
3			19	16	36	−06	74	70	07
4				46	78	16	43	02	46
5					83	81	33	39	86
6						47	50	37	71
7							31	09	86
8								53	41
9									10

TABLE 2.—ORIGINAL AND ROTATED FACTORS FOUND ON THE PURDUE RATING SCALE FOR INSTRUCTION

P.R.S.I. Scale	Original Factors			Rotated Factors			h^2
	I	II	III	I	II	III	
1	65	39	33	29	77	07	68
2	78	−48	−28	66	−02	70	93
3	54	−64	07	22	00	81	70
4	58	14	−58	83	00	00	69
5	87	46	23	52	86	10	102
6	90	24	−32	89	40	10	96
7	58	48	31	27	78	−05	68
8	72	−47	−09	49	09	71	75
9	57	−53	36	06	27	81	73
10	77	51	07	58	72	−05	86
Per cent of variance	50	21	9	30	27	23	80

only 0.02. Extraction of factors was terminated after three factors had been extracted, since an inspection of the residuals plus the application of the criteria suggested by Vernon (*9*, p. 130) and Tucker (*8*, p. 298) indicated that the residual variance lacked significance.

The obtained factor loadings were graphically and analytically rotated to achieve orthogonal simple structure. The original and rotated factor loadings can be found in Table 2. Rotated Factor I appears to be a general factor with medium or high loadings on all P.R.S.I. scales with the exception of Scale 9. This appears to be a broad 'halo' factor that is common to most of the P.R.S.I. scales.

Rotated factors II and III showed a very clear simple structure. Factor II had high loadings on the following four P.R.S.I. scales.

Scale	Description	Loading
5	Presentation of subject matter	0.86
7	Self-reliance and confidence	0.78
1	Interest in subject	0.77
10	Stimulating intellectual curiosity	0.72

The above four scales seem to hang together on rational grounds. All of them refer to aspects of the instructors' behavior involved

in his performance as a lecturer and only as a lecturer. In naming this factor (always a subjectively hazardous task), we might suggest the appellation of 'Instructional Competence'.

Four other P.R.S.I. scales showed high correlations with Factor III:

Scale	Description	Loading
3	Fairness in grading	0.81
9	Personal appearance	0.81
8	Personal peculiarities	0.71
2	Sympathetic attitude toward students	0.70

Again a common thread runs through the scales loaded with this factor. The theme appears to be the personality of the instructor as viewed by the student. The personal interaction of instructor and student would seem to be important here: what impression that the student has of his instructor's objectivity, empathy, and personal characteristics (both structurally and functionally). If forced to, we should prefer to call this factor 'Instructor Empathy'.

One comparable study is the factor analysis of the P.R.S.I. reported by Smalzreid and Remmers (*8*). Since this previous study analyzed the data from a high-school sample and only extracted

TABLE 3.—COMPARISON OF FACTOR LOADINGS ABOVE 0.50 FOUND IN TWO STUDIES OF THE PURDUE RATING SCALE FOR INSTRUCTION (DECIMAL POINTS OMITTED IN TABLE)

P.R.S.I. Scale	Smalzried and Remmers		Present Study	
	Factor I	Factor II	Factor II	Factor III
1	76		77	
2		77		70
3		88		81
4		73		
5	89		86	
6	69			
7	89		78	
8	72	53		71
9		79		81
10	67		72	

two factors from the matrix of intercorrelations (militating against a simple structure solution), it could not be expected that the results of Smalzried and Remmers would be comparable to the present results. However, an inspection of their data suggested an interesting comparison. In Table 3 are given the high loadings (above an arbitrary figure of 0.50) for the two factors found by Smalzried and Remmers and also the high loadings for rotated factors II and III in the present study. A remarkable parellelism is shown in the two sets of data. Smalzried and Remmers found more high loadings for their factors I and II than did the present study for factors II and III. A clue is offered to explain the discrepancy from the data in Table 2. P.R.S.I. scales 4 and 6, for which Smalzried and Remmers found high loadings and the present study did not, are the two scales with the highest loadings on our general factor I. Since this general factor was not separately extracted by Smalzried and Remmers, its variance is confounded with the variances of the other two important factors and partially obfuscates their structure. It is suggested that the extraction of a third factor by Smalzried and Remmers would have given, after subsequent rotation to simple structure, a factor structure for the P.R.S.I. remarkably similar to the one found here.

The scale factor loadings in Table 2 can be looked upon as the correlation of each P.R.S.I. scale with a 'pure' measure of a particular factor. In a sense they are validity coefficients useful in predicting the criterion of a factor score for an instructor. From these loadings, and the intercorrelations of the scales reported in Table 1, multiple regression equations for predicting factor scores were derived by the standard method outlined by Peters and Van Voorhis (*6*, pp. 225–229). Scales 1, 5, and 7 were found to have a multiple correlation of 0.89 with factor II and a similar correlation was found for P.R.S.I. scales 3, 8, and 9 in predicting factor III scores. Both coefficients were reduced to 0.86 by the shrinkage formula given by McNemar (*5*, p. 161). Table 4 gives the beta (b) weights for each of the P.R.S.I. scales, the raw score (B) regression weights, and the correction term for regression equations used in predicting factor II and factor III scores. In determining a factor II score for any instructor, his mean ratings on P.R.S.I. scales 1, 5, and 7 were multiplied by the B weights given in Table 4 and the correction added to the sum of these products. It must be

TABLE 4.—REGRESSION WEIGHTS USED IN PREDICTING FACTOR SCORES

P.R.S.I. Scale	Factor II		Factor III	
	b	B	b	B
1	0.29	0.0377		
2				
3			0.31	0.0795
4				
5	0.38	0.0277		
6				
7	0.31	0.0360		
8			0.23	0.0397
9			0.47	0.0644
10				
Correction	−7.79		−16.10	
Multiple correlation:				
Obtained	0.89		0.89	
Corrected for shrinkage	0.86		0.86	

noted that what we hereafter shall call 'factor scores' are only estimates of the score an instructor would receive if we had a pure measure of the factor, but that these estimated scores should correlate to the extent of 0.86 with 'true' factor scores.

An interesting question raised was whether the objective tests that nine of the eleven instructors had taken upon entering graduate school could be used in predicting their factor scores. Three tests had been used in this entrance battery: (a) the Miller Analogies Test, (b) a test of mathematical ability, and (c) a reading comprehension test containing three subtests measuring vocabulary, reading speed, and level. The two factor scores estimated for each instructor were correlated with these test scores by both product-moment and rank-difference (rho) methods. The correlation of each factor with the entrance tests, plus the intercorrelations of the factors, can be found in Table 5. The vocabulary subtest from the reading comprehension test correlated positively and significantly with both factors II and III, but this result needs investigation in another sample before such a test could possibly be used as a selection device for instructors of introductory psychology.

TABLE 5.—PRODUCT-MOMENT AND RANK-DIFFERENCE CORRELATION COEFFICIENTS BETWEEN RAW SCORES ON GRADUATE SCHOOL ENTRANCE TESTS AND ESTIMATED FACTOR SCORES FOR NINE INSTRUCTORS

Test Variables	Product-Moment		Rank-Difference	
	Factor II	Factor III	Factor II	Factor III
Miller Analogies	0.30	0.19	0.29	0.04
Mathematical Ability	−0.28	0.50	0.02	0.40
Reading Comprehension				
Vocabulary	0.77*	0.68*	0.81**	0.72*
Speed	0.55	0.33	0.51	0.48
Level	0.45	−0.42	0.37	−0.49
Factors (Intercorrelation)	0.19		0.32	

* Significant at the .05 level of confidence.
** Significant at the .01 level of confidence.

DISCUSSION

The major purpose of this study was to find whether factor analytic techniques applied to student ratings on the P.R.S.I. could provide an empirical method of combining separate scales to yield a smaller number of reliable and independent measures of instructor effectiveness. For this method to prove successful a clear and orthogonal simple structure solution must be found. The results reported in Tables 2 and 3 lead to the conclusion that these requirements are met by the factorial structure of the P.R.S.I. Eighty per cent of the variance of mean ratings on the first ten scales of the P.R.S.I. are accounted for by three orthogonal factors: a general factor permeating most of the scales and two group factors measuring independent dimensions of the teaching situation.

It must be acknowledged that only a relatively small number of instructors in a single subject matter area were used in the analysis, although the number of student raters participating was quite sizeable. However, the similarity in factor structure of the P.R.S.I. in this and in the only other published report suggest that the structure found here is neither a function of the smallness of the sample of instructors nor of using instructors from a single academic department. We should predict that

another sample would yield slightly different beta weights from those reported in Table 4, but the essential factor structure of the P.R.S.I. would remain unchanged.

The similarity of the factor structure of the P.R.S.I. found in this study to the structure previously reported by Smalzried and Remmers (*8*) has already been noted. In addition, Coffman (*4*) has reported a factor analysis of nineteen instructor ratings scales and the identification of four factors. Two of these four factors, Empathy and Organization, appear to be similar to the two group factors found in our studies. Coffman's third factor, Academic Stereotype, may be similar to our general factor.

The practical usefulness of the results lies in the stimulus for future research. We feel that we now have two fairly pure, independent, and quantifiable measures of instructor effectiveness based upon student ratings whose relationships with other measures of teaching aptitude and ability can be investigated. A tentative, but suggestive, beginning is reported in Table 5. Future research will be concerned with (a) the relation of these factors to other criteria of teaching competence, (b) the effect upon these criteria of characteristics of the student (age, sex, aptitudes, achievement, etc.), and (c) the development of aptitude measures useful in predicting a multiple criterion of teaching competence in psychology.

SUMMARY

The mean ratings of eleven introductory psychology instructors on the first ten scales of the Purdue Rating Scale for Instruction were intercorrelated and the resulting matrix factor analyzed by a centroid method. Three factors accounted for eighty per cent of the variance: a general factor permeating the scales, and two group factors that were labelled 'Instructional Competence' and 'Instructor Empathy'. Regression equations were developed to estimate factor scores of instructors on these last two dimensions and in both cases three P.R.S.I. scales were found to show a multiple correlation of 0.86 with the factors. Nine instructors had taken a battery of graduate school entrance examinations and their test scores were correlated with their factor scores. One test, reading vocabulary, was found to correlate significantly with both factor scores.

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VALIDITY OF TEACHERS' RATINGS OF ADOLESCENTS' ADJUSTMENT AND ASPIRATIONS[1]

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This study was concerned with the relationship between teachers' ratings of adjustment and aspirational traits in adolescents and various other self-report, objective, and projective measures of the same characteristics.

Teachers' ratings are frequently used for diagnostic, prognostic, guidance, and research purposes because of their ready accessibility and quantifiability. Moreover, when employed as averages of several raters and in relation to traits (a) which are overtly manifest and objectively observable in everyday behavior and (b) which can be specifically and unambiguously defined (*8*, *20*, *21*), such ratings enjoy considerable reliability. A further advantage of teachers' ratings is the fact that they can be based on frequent and prolonged observation of behavior under a variety of conditions.

With respect to teachers' ratings of adjustment, the main problem was to ascertain the kinds of relationships that prevail between these observational appraisals of personality traits involved in adaptation to the school environment and such other criteria of adjustment as absence of overt behavioral symptomatology or relatively low degree of deviancy with respect to the more general personality trends measured by projective instruments. To what extent do these different instruments measure similar, overlapping, or even entirely discrete aspects of the global concept of adjustment? A secondary problem had to do with the bases on which teachers' ratings of adjustment are made. To what extent are they related to ratings of aspirational traits and to pupils' scholastic competence and sociometric status?

[1] This research was supported by grants from the Bureau of Educational Research and from the University Research Board of the University of Illinois.

The second major problem dealt with in this study was the relationship between teachers' ratings of aspirational traits and 'real life' measures of level of aspiration. In a sense this question raises the problem of the validity of such ratings.

METHOD

Population.—The subjects in this study consisted of fifty students comprising, with the exception of a few absentees, the entire junior class of University High School[2] in Urbana, Illinois. The mean age of these students was 15.8 years, and the distribution by sex was twenty-four boys and twenty-six girls. A majority of students in this school come from professional homes, the parents generally holding academic appointments at the University of Illinois. Admission to the school, however, is unrestricted except for the payment of a small nominal tuition fee.

Teachers' ratings.—Five current teachers of each student were asked to make ratings at the end of the school year. In all, the ratings of fifteen teachers (eight male and seven female) were involved. Students were rated on a five-point scale on general adjustment (defined in terms of personality integration and emotional stability) and on three aspirational traits (persistence, scholastic competitiveness and academic aspiration). To minimize 'halo effect', the teachers were requested to rate all students on a single trait before proceeding to consideration of the next trait. The ratings of five teachers were averaged to provide a mean rating for each student on four traits.

'Real life' measures of aspiration.—'Real life' indices of aspirational level included both academic and vocational measures. The former consisted of (a) academic goal discrepancy—the algebraic difference between the student's expressed academic aspiration for the current school year and his composite grade point average for the preceding four semesters; and (b) academic performance estimate—the algebraic difference between the student's estimate of his cumulative high-school standing and his actual four-semester grade point average. Prediction of academic standing was made on a six-point scale (well below average to upper few), and aca-

[2] The authors acknowledge the coöperation and administrative assistance of Professor Charles M. Allen, Principal, and of the staff of University High School in collecting these data.

demic aspiration was expressed in terms of a five-point scale (get by to upper few). Grade point average was computed from actual grades which in this school are officially recorded on a five-point scale but are not divulged to students.

Three measures of level of vocational aspiration were utilized: (a) vocational prestige needs—the student's total weighted score on the level of interests, part of the Lee-Thorpe Occupational Interest Inventory[3] (*15*); (b) vocational tenacity—a composite standard score on a hypothetical level of aspiration test consisting of three hypothetical situations in which the subject is successively requested to suppose that he is preparing for a career in medicine, engineering, and a skilled trade, respectively, and that in the course of his vocational preparation he meets serious obstacles of a specified nature. In each of these situations, four alternatives are presented ranging from maintenance of the original goal at all costs (high vocational tenacity) to complete abandonment of the original vocational goal (low vocational tenacity). The subject's choice in each situation, appropriately weighted, is converted into a standard score, and all three standard scores are added to yield a composite score. (c) vocational unreality—the total discrepancy between each of the subject's nine percentile scores on the Kuder Preference Record (*14*) and the corresponding mean percentile scores of persons in his occupation of choice as given in the manual for this test.

Measures of adjustment.—In addition to teachers' rating of adjustment, the following indices of adjustment were employed: (a) M.M.P.I. adjustment score—total adjustment score on the Minnesota Multiphasic Personality Inventory (*11*). In deriving total adjustment scores, raw scores on each of the subscales were first converted into standard scores. Since a positive standard score on a given subscale indicated a degree of deviancy with respect to the trait measured that was greater than the mean score characterizing our population, a measure of total personality deviancy could be computed for each subject by merely summing

[3] This is a measure of general level of job prestige desired by an individual. The subject is presented with thirty triads of occupational activities in each of which area of work involved is held relatively constant while level of job prestige is varied. Total score is computed from the subject's preferences in each triad appropriately weighted in terms of job prestige.

all of his positive standard scores on the various subscales.[4] Finally, by reversing the sign of the total standard score, a measure of adjustment was obtained in which a high score was indicative of relatively good adjustment. (b) Rorschach adjustment score—an adjustment score derived from the Rorschach group test administered in accordance with the procedure developed by Harrower and Steiner (*10*), and scored in accordance with the system developed by Klopfer and Kelley (*13*). The adjustment score represents the total number of entries made in Munroe's check list[5] (*18*) expressed as a standard score with the sign reversed so that a high score is indicative of good adjustment. (c) Rorschach anxiety score—the total number of occasions specified signs of anxiety appeared in the subject's protocol. Criteria of anxiety included fifteen commonly accepted signs such as diffuse shading responses, signs of shading shock, high number of card rejections, threatening or evasive responses, high percentage of oligophrenic responses, etc. (*9*, *13*, *19*). Each time one of these fifteen anxiety signs occurred, the subject was credited with one point. Thus, high Rorschach anxiety scores are indicative of relatively high levels of anxiety and vice versa. (d) Composite adjustment score —the algebraic sum of the subject's standard M.M.P.I., Rorschach adjustment and teachers' adjustment rating scores. (e) I.P.I. anxiety score—total score on a paper-and-pencil inventory designed to measure anxiety level (Illinois Personality Inventory). (f) Sociometric status—the mean sociometric rating earned by each student when rated sociometrically by all of his classmates on a five-point scale ('definitely not wanted as a friend' to 'wanted as a best friend'). (g) Grade point average—the student's cumulative grade point average over four semesters computed on a five-point scale. As in the case of sociometric status, a numerically high score is at the desirable end of the scale.

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[4] Since a negative standard score is indicative of deviancy on the masculinity-femininity subscale, negative standard scores on this scale were added to the other standard scores to obtain total M.M.P.I. adjustment score (prior to final reversal of sign).

[5] This check list proposes criteria for a 'normal' range of responses for each type of scoring determinant. Entries in the check list, therefore, represent deviancy from the proposed limits of normalcy.

TABLE 1.—INTERCORRELATIONS AMONG PERSONALITY TRAITS AS RATED BY TEACHERS

	Adjustment	Persistence	Scholastic Competitiveness	Academic Aspiration
Adjustment	.90*	.71	.60	.42
Persistence	—	.87*	.81	.73
Scholastic Competitiveness	—	—	.83*	.79
Academic Aspiration	—	—	—	.90*

NOTE: All coefficients of correlation in this table are significant beyond the one per cent level of confidence.

* Mean intercorrelation between five teachers' ratings of subjects on same trait computed by 'squared r' method, and corrected by Spearman-Brown formula to indicate the predicted reliability of the combined judgments of five raters.

RESULTS AND INTERPRETATION

Reliability and Generality of Measures.—The reliability (generality over-raters) of teachers' ratings is shown in Table 1. For each trait the mean intercorrelation (computed by the squared r method) between the ratings of five teachers on the same pupils was obtained. This was corrected by the Spearman-Brown formula to indicate the predicted reliability of the average rating of five teachers. Application of the correction formula was considered justifiable since an average of five ratings is more reliable than a single rating in the same sense and to the same predictable degree that a ten-item test is more reliable than a two-item test. The resulting reliability coefficients approximate the range of magnitude generally obtained with combined teachers' ratings.

Table 1 also shows that teachers' ratings exhibit considerable generality over traits. This is not necessarily indicative of 'halo effect' since the three aspirational traits both closely resemble each other and are not logically unrelated to adjustment. Furthermore, the intercorrelations among aspirational traits are higher than the correlations between these latter traits and adjustment.

The reliability[6] of academic goal discrepancy and of academic

[6] A more definitive presentation and discussion of the reliability, generality, and psychological significance of 'real life' measures of level of aspiration are given in a previous paper (*5*). The more relevant findings are summarized here to provide some objective basis for appraisal of these measures.

performance estimate scores could not be ascertained, but there was a high degree of relationship between these two different indices of level of academic aspiration. Vocational tenacity scores on the three different kinds of situations (i.e., medicine, engineering, and skilled trade) exhibited a degree of generality which was proportionate to the degree of similarity between the vocations. The test-retest reliability of the level of interests scores on the Occupational Interest Inventory (identical with our measure of vocational prestige needs) is given as .88 in the test manual (*15*). The reliability of vocational unreality scores could not be determined. Vocational prestige needs were significantly related to both vocational unreality and vocational tenacity in boys, but correlations between academic and vocational measures of level of aspiration were not significant.

It was not feasible for either technical or administrative reasons to obtain reliability coefficients for the Rorschach measures, the M.M.P.I. adjustment score, or the composite adjustment score. Intercorrelations among Rorschach adjustment score, M.M.P.I. adjustment score and teachers' rating of adjustment (see Table 2) were generally non-significant except for the correlation between the latter two measures in our female subjects. The correlations between each of these three measures and composite adjustment score were spuriously high because each measure was a component part of the composite score. M.M.P.I. adjustment score was the most representative component of the composite measure in boys, and teachers' rating of adjustment enjoyed comparable status among girls.

TABLE 2.—INTERCORRELATIONS AMONG ADJUSTMENT SCORES

	Rorschach Anxiety		M.M.P.I. Adjustment		Teachers Adjustment		Anxiety Level (I.P.I.)		Sociometric Status		Composite Adjustment	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Rorschach Adjustment	−.24	−.19	.31	−.21	−.26	−.09	*−.40	−.32	−.17	.30	**.59	.40
Rorschach Anxiety	—	—	−.11	.01	−.21	−.16	.36	.06	−.17	−.22	−.21	−.20
M.M.P.I. Adjustment	—	—	—	—	.05	**.57	−.06	**−.56	.04	.13	**.79	**.61
Teacher Adjustment	—	—	—	—	—	—	.03	**−.52	**.75	**.64	*.40	**.79
Anxiety Level (I.P.I.)	—	—	—	—	—	—	—	—	.03	.01	.17	*−.45
Sociometric Status	—	—	—	—	—	—	—	—	—	—	*.44	**.59

* Significant at the five per cent level.
** Significant at the one per cent level

Thus, it appears that the aspects of adjustment measured, respectively, by teachers' observational ratings of classroom behavior, a self-report index of behavioral deviancy with respect to various syndromes in psychopathology, and a projective measure of general personality integration are relatively unrelated to each other in our sample of adolescents. If all three measures are equally valid, they must all be measuring quite different aspects of adjustment which (except for M.M.P.I. and teachers' ratings in girls) show no significant overlap whatsoever. The same type of relationship holds true for self-report (I.P.I.) and Rorschach measures of anxiety which were not significantly correlated. This latter datum is not in accord with the previously reported finding of a significantly positive relationship between these two measures of anxiety in a population of college students (*4*).

More in accordance with expectations, I.P.I. anxiety scores correlated negatively with composite and M.M.P.I. adjustment scores, and with teachers' ratings of adjustment in girls, and with Rorschach adjustment scores in boys. The relationships between Rorschach anxiety scores and other measures of adjustment were not significant. At least among our adolescent girls, therefore high levels of anxiety as measured by the I.P.I. tended to be associated with poor adjustment and vice versa. A possible explanation for this sex difference might lie in the prevailing cultural attitude that high levels of striving (and of the anxiety that accompanies such striving) are more acceptable and compatible with good adjustment in boys than in girls. In support of this interpretation was the fact that teachers' adjustment ratings were more consistently negatively related to boys' than to girls' academic goal discrepancy scores and academic performance estimates (see Table 4).

Relationship between teachers' ratings and other measures of adjustment.—As already noted, teachers' rating of adjustment was not significantly related to Rorschach adjustment score in either sex, but was positively related to M.M.P.I. adjustment score in girls ($p. < .01$). Teachers' rating of adjustment was also significantly more highly related to composite adjustment score in girls than in boys, although in each case the coefficient of correlation was spuriously high. Rorschach anxiety score was not significantly correlated with teachers' rating of adjustment, but

I.P.I. anxiety score was negatively related to the latter score in girls ($p. < .01$).

It would appear, therefore, that for our population of adolescents, teachers' ratings of adjustment are a more valid and psychologically meaningful measure in relation to girls than in relation to boys. Appraisal of boys' adjustment status is very possibly complicated in the minds of teachers by the fact that certain traits related to extremely high levels of striving (and the associated anxiety) are regarded as unfavorable for adjustment by mental hygienists, but are nevertheless accepted as desirable in connection with our cultural ideal of masculine success. In the case of girls, on the other hand, teachers are apparently less confused by contradictory criteria of adjustment. Supporting this interpretation are (a) the significantly negative correlation between girls' I.P.I. anxiety scores and teachers' adjustment ratings, in contrast to the approximately zero coefficient of correlation between the corresponding scores of boys, and (b) the more consistent tendency for teachers' ratings of adjustment to be correlated negatively with objective indices of academic level of aspiration in the case of girls (see Table 4).

A clue regarding the bases on which teachers' ratings of adjustment are made appears in the moderately high degree of positive relationship found between these ratings and (a) ratings on aspirational traits, (see Table 1), and (b) pupils' sociometric status and grade point average (see Table 3). The composite portrait of a pupil who receives a high teachers' rating on adjustment is an individual who is perceived by teachers as persistent and scholastically competitive, who is highly accepted by his classmates and who has a superior scholastic record. Table 4 also shows that his academic aspirations tend to be more commensurate with his past academic performance as evidenced by the negative correlation between academic goal discrepancy and teachers' adjustment rating. In addition, if the pupil is a girl, she will tend to have high M.M.P.I. and composite adjustment scores and a low I.P.I. anxiety score.

Table 3 also shows the relationships between teachers' ratings of aspirational traits and other non-rating scale indices of adjustment. Aspirational ratings were not significantly related to M.M.P.I. and Rorschach adjustment scores or to Rorschach

TABLE 3.—CORRELATIONS BETWEEN TEACHERS' RATINGS AND VARIOUS MEASURES OF ADJUSTMENT

Measures of Adjustment	Teachers Ratings							
	Adjustment		Persistence		Scholastic Competitiveness		Academic Aspiration	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
M.M.P.I. Adjustment	.05	**.57	−.06	−.02	−.01	−.05	−.16	−.24
Rorschach Adjustment	−.26	−.09	−.03	−.14	−.28	.22	−.12	.30
Rorschach Anxiety	−.21	−.16	−.19	.02	−.14	−.10	−.12	−.17
Anxiety Level (I.P.I.)	.03	**−.52	−.30	**−.52	−.38	−.20	−.30	−.34
Composite Adjustment	*.40	**.79	*.44	**.57	.23	**.53	−.04	**.70
Sociometric Status	**.75	**.64	**.54	*.48	*.46	*.42	*.40	*.39
Grade Point Average	**.59	**.61	**.78	**.72	**.92	**.84	**.61	**.71

* Significant at the five per cent level.
** Significant at the one per cent level.

anxiety ratings. A puzzling negative relationship ($p. < .01$) prevailed between girls' I.P.I. anxiety scores and teachers' ratings on persistence. Teachers' ratings of aspirational traits were significantly correlated with composite adjustment in girls; in the case of boys this was only true with respect to persistence.

In general, as one might expect, grade point average was more highly correlated with aspirational ratings than with ratings of adjustment, but the reverse held true for sociometric status (see Table 3).

Relationship between teachers' ratings and 'real life' measures of aspiration.—Table 4 shows that there is a pronounced tendency for academic goal discrepancy scores to be negatively correlated with such highly related teachers' ratings as scholastic competitiveness, persistence, and academic aspiration. Thus, students who expressed relatively high academic aspirations for the future in the light of previous scholastic performance tended to receive ratings from teachers which were indicative of relatively low aspirational level. This same tendency prevailed with respect to academic performance estimate, but was significant only for girls, and in only two out of three instances. Generally speaking, relationships between teachers' ratings of aspirational traits and

TABLE 4.—CORRELATIONS BETWEEN TEACHERS' RATINGS AND 'REAL LIFE' MEASURES OF LEVEL OF ASPIRATION

'Real Life' Measures of Level of Aspiration	Adjustment		Persistence		Scholastic Competitiveness		Academic Aspiration	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Academic Goal Discrepancy	*−.43	*−.49	**−.57	**−.59	**−.52	**−.57	−.30	*−.44
Academic Performance Estimate	−.20	*−.46	−.20	*−.43	−.38	*−.48	−.15	−.31
Vocational Prestige Needs	−.25	−.10	.16	.11	.31	.23	.35	.25
Vocational Tenacity	−.11	−.19	−.04	−.15	.22	*.45	.34	.37
Vocational Unreality	−.31	−.22	−.13	.37	−.08	.27	−.03	.33

* Significant at the five per cent level.
** Significant at the one per cent level.

measures of vocational aspiration were not statistically significant and exhibited no consistent trend with respect to direction.

This negative relationship between 'real life' measures of academic aspiration and teachers' ratings of aspirational traits (ostensibly based on motivational behavior in an academic setting) casts doubt upon the validity of the latter measures. It confirms findings in a previous study with intellectually gifted sixth-graders (*1*) in which the writer failed to obtain significant relationships between teachers' ratings of aspirational traits and a measure of prestige motivation (i.e., relative tendency to respond to an incentive of personal prestige by increasing work output over the level achieved under conditions of anonymity). Another supportive finding in this latter study was a zero correlation between these same ratings and pupils' self-ratings on aspirational traits (*1*). Lewis (*16*), on the other hand, obtained very significant differences between 'educationally retarded' and 'educationally accelerated' gifted children aged nine to fourteen with respect to teachers' ratings on perseverance and ambitiousness.

Although educational performance (holding other factors constant) is perhaps a more definitive criterion of the validity of ratings of aspirational traits than either self-ratings or objective

test measures, it should be realized that such evidence of validity is largely circular when the ratings are made by teachers. Since teachers' ratings of motivation are substantially based on academic performance, the latter criterion can hardly be considered independent. In the present study, correlations of .61 to .92 were obtained between teachers' ratings of aspirational traits and grade point average (see Table 3).

Taking all of the evidence into consideration, there is certainly good reason for questioning the validity of teachers' ratings of pupils' aspirational characteristics. This lack of validity is apt to be even more serious in the case of adolescent pupils, judging from the findings of the present study and from the relatively poor insight of teachers into high-school pupils' interests (*6*) and sociometric status (*7*). Also, at least with respect to the latter function, teachers' perceptual ability has been shown to decrease markedly with increasing age of pupils (*3*, *17*).

SUMMARY AND CONCLUSIONS

Teachers' ratings of adjustment and aspirational traits were obtained for a class of fifty juniors in a University high school and related to various other self-report, objective, and projective measures of the same characteristics. The following conclusions can be reached with respect to our particular sample of adolescent boys and girls, and deserve to be tested on a more representative population:

1) Averages of five teachers' ratings of adjustment and aspirational traits enjoyed high split-half reliability.

2) Rorschach adjustment score, teachers' adjustment rating, and M.M.P.I. adjustment score were not significantly intercorrelated except for the latter two measures in the case of girls. Thus, all three instruments appear to be measuring quite different aspects of adjustment showing little or no overlap.

3) High level of anxiety, as measured by the Illinois Personality Inventory (I.P.I.) was consistently associated with poor adjustment in girls. This was not true of boys. The suggestion was offered that anxiety, especially the variety associated with high striving, is more compatible with and culturally acceptable as evidence of good adjustment in boys than in girls.

4) Teachers' ratings of adjustment appear to be more meaning-

ful and psychologically valid for girls than for boys in as much as they were correlated in the appropriate direction with M.M.P.I. and composite adjustment scores and with I.P.I. anxiety score. This sex difference is attributed to the prevailing cultural ambivalence regarding the adjustive value of anxiety for boys in the light of their social sex rôle. In the case of girls, teachers' ratings of adjustment also tended to be more consistently correlated in the negative direction with 'real life' measures of level of academic aspiration.

5) Teachers tended to give high adjustment ratings to pupils whom they perceived as persistent and scholastically competitive, who were highly accepted by their classmates, who had superior scholastic records, and whose academic aspirations were commensurate with past academic achievement.

6) Teachers' ratings of pupils' aspirational traits were very highly related to the latter's scholastic standing. Hence, academic performance can not be used as an independent criterion of the validity of these ratings.

7) In view of the reliably negative correlations obtained between 'real life' measures of level of academic aspiration and teachers' ratings of aspirational traits, the validity of the latter measure seems highly questionable.

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AN EXPERIMENT IN NINTH-GRADE READING IMPROVEMENT

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The Rochester public schools have recently experimented with several ways for improving reading ability. The experiments were designed for normal classroom use and were carried on with ninth-graders. Attention was centered particularly on methods which might be effective with poorer readers. This effort began in 1951–1952 with experimental use of the fourteen State University of Iowa Reading Films, and was extended in 1952–1953 to include a number of other group methods.

1951–1952 EXPERIMENT

Purpose.—During the school year 1951–1952 the State University of Iowa Reading Films were used experimentally in all ninth-grade classes of two high schools. The purpose of this experiment was to investigate the merit of the films in the improvement of reading ability.

In setting up the experiment, certain conditions had to be met: (1) the actual showing of the films had to be fitted into the regular schedule of classes; (2) the projection rooms could be used only in such a way as not to disrupt their use by other classes in the school; (3) practice reading material had to be readily available; (4) the test selected for measuring changes in reading ability had to have three parallel forms, each requiring not more than one class period for administering; (5) all parts of the experiment had to be such that they could be carried on by classroom English teachers who were not specially trained in the teaching of reading.

Procedures.—

Pre-test

1) Form A of the Nelson Silent Reading Test[1] was administered

[1] All results were based on total scores for the Nelson Silent Reading Test, which were composed of scores on the following separately timed sub-

to all ninth-grade pupils (four hundred and seventy-three) in two high schools in October 1951. The two schools selected were of average size, had heterogeneous populations, and were not atypical of other high schools in the city. This and all subsequent tests were centrally scored by experienced test clerks.

2) The fourteen State University of Iowa Reading Films were used with one half of the groups at the rate of one film a week, and with the other half at the rate of two films a week. Each film showing occupied three to five minutes at the beginning of the class period.

3) After each film a ten-question objective-type test (supplied by the film producer) was administered in order to sharpen the attention of the pupils to the content of the film. Each pupil kept a record of his scores on these 'film tests'.

4) During the same class period the pupils read a selected *Reader's Digest* article and noted the length of time required for reading.

5) Each pupil converted his reading time into a reading rate for each article and maintained a continuing graph of his reading rates for the fourteen articles.

Mid-test

6) A few days after using the last film in the series, Form B of the Nelson Silent Reading test was administered. This was intended to measure the reading ability at the end of the film showings.

7) Then followed a 'retention' period of three and one-half months during which there was no particular classroom emphasis on reading improvement.

Post-test

8) After the expiration of this interval, Form C of the Nelson Silent Reading test was administered. This was intended to measure the reading ability three and one-half months after the showing of the films had been completed.

9) No control groups were established. Gains were measured in

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tests: vocabulary, reading for general significance, ability to note detail, and ability to predict probable outcomes.

TABLE I.—RESULTS OF PRE- AND POST-TESTING NINTH GRADES 1951–1952

Median Grade Equivalents		Median Gains	
At start of experiment (at 9.1)	At end of experiment (at 9.75)	Total	Beyond expectation
8.87	10.39	15 months	8.5 months

normal classroom situations, and were based upon the grade equivalents established by the test publisher.

Findings.—The findings for the ninth-graders as a group are shown in Table I.

1) There was no significant difference between the groups that saw one film a week and the groups that saw two films a week.

2) During the course of the experiment (six and one-half months) the median gain for the four hundred and seventy-three pupils was fifteen months, or a net gain of eight and one-half months beyond expectation (expectation meaning the number of months in the interval of the experiment).

3) After separating the pupils on a basis of their scores at the beginning of the experiment, (a) the median gain of the top quarter was five months beyond expectation, (b) the median gain of the middle half was eight and one-half months beyond expectation, (c) the median gain of the lowest quarter was fifteen months beyond expectation.

4) The distribution of the gains of the four hundred and seventy-three pupils showed that four hundred and forty-five pupils, or ninty-four per cent, gained more than expectation during the course of the experiment.

Questions Raised.—Consideration of the findings of the experiment brought up two significant questions:

1) Would the rather startling gains made during 1951–1952 be maintained, or increase still more, or decrease, during the subsequent year, if the pupils had no further experimentation with reading? This question might be answered by follow-up testing during the following school year.

2)Would it be possible to attain similar gains by using a simpler method made up of parts of the original method? This seemed particularly important because the original method involved certain difficulties, such as, (a) the problem of scheduling large num-

TABLE II.—COMPARISON OF GAINS FOR NINTH AND TENTH GRADE TESTING OF IDENTICAL PUPILS

Grade	Changes in Median Grade Equivalents	Interval	Comparative Gains
9th	14.5 months gain during 6.5 months (gr. level 8.95 to gr. level 10.4)	Oct. '51–May '52	8 months more than expectation
10th	4 months gain during 9 months (gr. level 10.4 to gr. level 10.8)	May '52–Apr. '53	5 months less than expectation

bers of classes with limited numbers of films and projection rooms, (b) eyestrain reported by some pupils, (c) frustration and confusion of some pupils, resulting in decreased motivation, (d) the artificiality of reading from a motion picture screen.

Follow-up.—This was an effort to determine the extent to which the gains made during 1951–1952 were carried on into the tenth grade when there was no particular emphasis on reading (Question 1 above).

The Nelson Silent Reading Test, Form C, was given in April to the tenth grade in the same two high schools. Table II includes three hundred and fifty-six identical pupils. The first line shows gains made during the ninth-grade experiment, the second line shows gains made during the tenth-grade when no experiment was being conducted.

1952–1953 EXPERIMENT

Purpose.—An attempt was made to answer Question 2; namely, would it be possible to attain similar gains in reading ability by using a simplified method?

Procedures.—1) All ninth-grade pupils in the Rochester public schools (2166) were pre-tested with the Nelson Silent Reading Test, Form A, in October, 1952. The tests were scored centrally by experienced test clerks.

2) The 2166 pupils were divided into the eight groups listed below, with a different method being used in each group. Each group contained some above-average, some average, and some below-average English classes. These eight methods for improving read-

ing ability were then used for the next seven weeks:

Method	Pupils and Schools	Description of the Method
A	284 pupils in four schools	14 timed articles from the *Reader's Digest*, graph of reading rate
B	148 pupils in two schools	14 reading films and film tests
C	253 pupils in four schools	7 reading films and film tests, 14 timed articles from the *Reader's Digest*, graph of reading rate
D	225 pupils in four schools	3 reading films and film tests, 7 timed articles from the *Reader's Digest*
E	121 pupils in two schools	14 reading films and film tests, 14 timed articles from the *Reader's Digest*, graph of reading rate (same method as in first year)
F	229 pupils in two schools	14 timed articles from *SRA Better Reading Book II*, graph of reading rate
G	177 pupils in two schools	14 timed articles from *Let's Read* (Silver book), graph of reading rate
H	729 pupils in seven schools	No special treatment, pre- and post-testing only
Total	2166 pupils in nine schools	

3) This was followed by a 'retention' period of three and one-half months.

4) Pupils were then post-tested with the Nelson Silent Reading Test, Form C, in March, 1953.

5) No control groups were established. Gains were measured in normal classroom situations, and performances were expressed in terms of the grade equivalents established by the test publisher.

Findings.—1) Median gains for each of the eight methods are shown in Table III.

2) Considering the lowest quarter, the middle half, and the top quarter of the pupils, separated on the basis of their scores on the pre-test at the beginning of the experiment, the median net gains for each method (gains beyond expectation) are shown in Table IV.

3) It is worth noting in Table IV that these methods produced reasonable net gains with all groups of pupils and the largest net gains with the lowest quarter of pupils.

4) An examination of the data showed that there was apparently

TABLE III.—RESULTS OF PRE- AND POST-TESTING NINTH GRADES, 1952–1953

Method	Median Grade Equivalents		Median Gains	
	At start of experiment (at 9.1)	At end of experiment (at 9.6)	Total	Beyond expectation
A	9.2	10.3	11 months	6 months
B	8.9	10.0	11 months	6 months
C	9.0	10.2	12 months	7 months
D	9.0	10.2	12 months	7 months
E	8.4	9.7	13 months	8 months
F	9.3	10.5	12 months	7 months
G	8.6	10.0	14 months	9 months
H	8.7	9.9	12 months	7 months

no relation between the size of the net gains of the lowest quarter (Table IV) and the median of the lowest quarter at the start of the experiment in October, 1952. For example, the two groups with the lowest starting grade equivalents were E and H. These made neither the greatest nor the least net gains. Similarly, the two groups with the highest starting grade equivalents were D and F. They made neither the greatest nor the least net gains. The median starting grade equivalents ranged from 6.5 to 7.1.

5) With respect to the lowest quarter of the pupils, the difference from one method to the next is not large. It is worth noting, however, that the two groups that used the entire series of fourteen films (B and E, Table IV) made the smallest gains. The two groups

TABLE IV.—MEDIAN NET GAINS BY EACH METHOD FOR VARIOUS LEVELS OF READING ABILITY NINTH GRADES 1952–1953

Method	*Lowest quarter* Below 7.8 gr. eq. in Oct. '52	*Middle half* 7.8 to 9.7 gr. eq. in Oct. '52	*Top quarter* 9.8 or higher gr. eq. in Oct. '52
A	14 months	6 months	2 months
B	7 months	7 months	3 months
C	12 months	7 months	4 months
D	13 months	7 months	4 months
E	9 months	8 months	7 months
F	11 months	8 months	6 months
G	18 months	7 months	7 months
H	11 months	7 months	4 months

that made the largest gains were the ones that only read some type of timed articles (G and A, Table IV).

6) The distribution of the gains of the 2166 pupils shows that 1842, or eighty-five per cent, gained at least as much as expectation during the course of the experiment.

CONCLUSIONS

1) All methods used, both in 1951–1952 and 1952–1953, were effective in raising reading levels of ninth-graders as a group beyond expectation.

2) Of the eight methods used in 1952–1953, there was no appreciable difference among the various methods in median net gains of the total groups.

3) Certain methods were appreciably more effective with the lowest quarter of the pupils.

4) In the 1951–1952 experiment startling gains in reading ability were associated with the State University of Iowa Reading films; however, in 1952–1953 similar gains were obtained without the use of reading films.

5) Pre-testing and post-testing alone appear to be a valuable method of motivation for reading improvement.

6) Gains more than expectation which occurred with experimentation changed to gains less than expectation when experimental procedures ceased.

IMPLICATIONS FOR CLASSROOM PROCEDURES

The experiments seem to imply that the critical factors in increasing reading ability of pupils are (1) the focusing of attention of the teacher on reading improvement of the pupils, and (2) the focusing of attention of each pupil on the possibility of his own self-improvement in reading. This may be accomplished through a systematic, planned procedure. It would appear that systematic regularity in the use of films and/or practice reading material is a strong motivating device. It is also apparent that pre-testing at the beginning of the school year, followed by post-testing several months later is a strong motivating force, providing that the testing itself is announced and explained in advance.

If the once-emphasized attention on reading improvement is removed, pupils generally will then fail to continue to improve at the increased rate. Review of the 1951–1952 and 1952–1953 experi-

ments indicates that these methods of improving reading result in a temporary acceleration of gains. When the emphasis is removed the gains tend to decelerate to normal or less, although the actual reading level (grade equivalent) may still be above the chronological grade level.

All the eight methods described in a preceding section were effective in improving reading ability of pupils, and particularly so for the poorer readers. Each method is relatively easy to use, and may be incorporated into most high-school classes with a minimum of interference with other classroom work. It would appear that classroom teachers might well consider any one of these methods as a means for reading improvement.

THE PSYCHOLOGY PREREQUISITE TO EDUCATIONAL PSYCHOLOGY

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The question at which the investigations reported below were aimed was whether or not the competence of students in educational psychology at the Oklahoma Agricultural and Mechanical College is affected by the fact that they had previously taken or were concurrently taking a course in psychology. This purpose was tested by two slightly different designs.

DESIGN OF THE FIRST EXPERIMENT

Hypothesis: The hypothesis tested was that students who had previously taken some work in psychology would do no better in educational psychology than those who had taken none.

Criterion: The criterion of success used was ability exhibited on the various essay and objective tests submitted by the student. These were designed to test the ability of the student to apply psychological insights rather than to recognize or reproduce memorized material. A numerical error score was assigned to each piece of work handed in by the student. The error score on the objective tests was the number wrong. The error score on the essay materials was assigned by estimating how far short the student fell of the requisites stated in a model answer. The objective test errors contributed about 1.5 times as much to the total score as did the essay errors.

Subjects: The subjects used were drawn from the Fall, 1950, educational psychology classes of the writer. Two groups of subjects were defined. One of the groups was composed of subjects who had not had and were not concurrently taking any courses that were primarily psychological in nature. The other group was composed of individuals who had completed one or more courses which were primarily psychological in nature (whether taken in the department of psychology or not) before entering the course in educational psychology.

Matching: The next step was to draw matched subjects from the two groups. Matching took place in ignorance of the criterion

scores. The subjects were matched on three variables—ACE percentile, hours of 'outside' work, and sex. Twenty-eight pairs were matched. The mean difference between the two groups was 0.5 ACE percentile units. The mean absolute difference was 1.5 with a range of 0–4. The differences favored the group having had no psychology—a conservative error.

Twenty of the twenty-eight pairs were matched by sex.

In order to match the students on hours of work aside from school work, data were gathered by means of a check list consisting of five categories: 0–5 hours of work, 5–10, 10–15, 15–20, and more than 20. The students were instructed to consider as work anything which occupied their time which fell outside the "normal student living processes." They were instructed to consider housekeeping and varsity practice, but not studying, as work for this purpose. The matching on this variable was not as good as for the ACE (ACE scores were considered more important and given priority in the matching process), exhibiting a mean difference of 0.5 scale units in favor of those who had taken psychology, i.e., they worked about two and one-half hours less per week than those who had taken no psychology. This was a non-conservative error.

In all, it is considered that the matching was reasonably good.

Results: Of the 28 who had taken psychology, 20 did better than the subjects with whom they had been paired, 2 did just as well, and 6 did more poorly. Using a split of 20 to 8, this yields a chi-square of 5.14. With one degree of freedom this corresponds to a p-level of less than .05.

The mean difference between the two groups was 15.5 error units in favor of the group which had taken psychology. This corresponds to about one median deviation of the array of error scores.

EXPERIMENTAL DESIGN OF THE SECOND EXPERIMENT

Hypotheses: Three related hypotheses were tested. The first was that those students who had taken the first course only in a department of psychology would do no better in a course in educational psychology than those who had not taken psychology. The second hypothesis was that those who had taken the first course only in a department of psychology or one course only which was primarily psychological in nature, but given by a department other than psychology, would do no better than those who had no psychological background. The third was that those who had some psycholog-

ical background, however extensive, would do no better than those who had no psychology. These three phases will be referred to below as units 1, 2, and 3. The three units are cumulative—that is, unit 2 includes unit 1, and unit 3 includes both 1 and 2.

Criterion: The criterion of success was score on the standardized test, "A Study of Barry Black." This test is designed to test ability to apply psychological knowledge rather than to test memory. Its reliability is .79 (*1*).

Subjects: The subjects were drawn from the Fall, 1951, and Fall, 1952, educational psychology classes of the writer and the Fall, 1952, educational psychology class of another instructor.[1] Again two groups of subjects were defined. One was composed of subjects with no psychology course background prior to the course in education psychology. The other was composed of subjects who had taken some psychology course either previously to or concurrently with the educational psychology course.

Matching: This time the subjects were matched on ACE score, hours of work, sex, college class, instructor, and year the course was taken. The matchings took place in ignorance of the scores made on the test. In no case was the student of one instructor matched with a student of the other. Neither was a student taking a course in one year matched with one taking a course in another year. The next most important variable was considered to be the ACE score and some accuracy in matching on the remaining variables was sacrificed in order to get a good match on the ACE score.

Table I indicates the effectiveness of the matching procedure. It will be noted that the average differences in ACE scores are all in favor of the group which had taken psychology, but the differences are so small that they were considered negligible. The differences in hours of work in favor of the 'with psychology' group are proportionately larger but still small. The differences in class standing were in favor of the 'no psychology' group. Matching on the variable of sex was not good but the significance of this is obscure. The mean absolute difference in ACE score was about half a standard error and in no case was a match made where the difference was greater than 7 or approximately one standard error. In all it is considered that the matchings were adequate. Matchings for unit 2 were best.

[1] I am indebted to Dr. Roy Sommerfeld of Oklahoma A. and M. College for his coöperation.

TABLE I.—MATCHING FOR THE THREE UNITS

	Unit 1	Unit 2	Unit 3
Number of pairs	28	36	39
ACE mean algebraic difference[a,b,c]	−0.32	−0.08	−0.13
ACE mean absolute differences[b]	2.9	2.9	2.9
Range of ACE differences[b]	7	7	7
Work mean differences[c,d]	−0.25	−0.06	−0.15
Class mean difference[c,e]	0.25	0.25	0.21
Number of pairs matched on sex	20	21	23

[a] The standard deviation of the ACE combined raw score is about 25 (2).

[b] The standard error of the ACE total raw score is of the order of 7 (2).

[c] A minus indicates a difference which is presumed to be in favor of the group which had taken psychology—a non-conservative error.

[d] Five-hour classes make up this scale. Thus a difference of 0.25 indicates about one and one-quarter hours per week difference in time spent working.

[e] The freshman class was assigned a value of one; the sophomore, two, etc.

TABLE II.—FINDINGS OF THE SECOND EXPERIMENT[2]

	Unit 1	Unit 2	Unit 3
Average difference between means[a,b]	10.93	22.03	18.36
t-scores of difference	1.07	2.29	1.95

[a] The difference in raw score between the 40th and 60th percentiles is 20; that between the 80th and 90th is 20 (1).

[b] All three differences are in favor of the 'with psychology' groups.

Findings: The results of the second experiment are summarized in Table II.

If the one-tail test is used, all three t-scores correspond to the five per cent level or less.[3] If the two-tail test is used only the second unit reaches the five per cent level of significance, that for the third unit falling slightly short of that level (t = 2.025 for 38 degrees of freedom at the five per cent level).

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[2] I am indebted to the Statistical Laboratory of Oklahoma A. and M. College for the calculation of the t-scores.

[3] The use of the one-tail test seems justified since the experiment was designed to test only whether having had psychology makes a student better able to cope with educational psychology. There is no reason to suspect that a complete reversal of this proposition would occur.

SUMMARY

Two experiments were designed to test the efficacy of a psychological background as an aid to the student in educational psychology. Both experiments were paired experiments and differed essentially only in that the criterion of success in the first was a total score on all the teacher-made assignments of the course in educational psychology while the criterion of success in the second was the score on a standardized test.

In the first experiment the difference in favor of the 'with psychology' group was fairly large and the five per cent level was reached through the use of the fairly crude chi-square. The second experiment was analyzed in three stages. All three showed a difference in favor of the 'with psychology' group. Using a paired analysis and the one-tail test all three stages were significant at the five per cent level. Using the two-tail test only the second stage was significant at the five per cent level.

DISCUSSION

It is interesting to speculate concerning the reasons why the difference in the second experiment was smaller than that in the first. One possible reason is the fact that, having analyzed the results of the 1950 experiment, the instructor told the two successive classes that those without the prerequisite psychology were at a disadvantage and gave the class some material designed to help the student bridge the gap. Another possible reason is that the criterion of the first experiment was both longer and broader—there were more objective questions and some essay material was included.

CONCLUSIONS

It is concluded that a background of psychology will help the students make a higher grade in the course in educational psychology at Oklahoma A. and M. College. Whether or not this would be true of other colleges could easily be a function of the nature of courses which are given. The differences actually obtained were of sufficient magnitude to affect the grade by one grade point, i.e., a student without a background of psychology who received a C would likely have received a B had he had a course in psychology. While this is hardly world-shattering, it is certainly of sufficient importance to be taken into account.

Lastly, it should be explicitly stated that there is no implication in this material that a prerequisite course in psychology affects only the grade in educational psychology. It is reasonable to assume, for instance, that class discussions can go faster and further when the students have some psychological background. Investigations of such factors would be very desirable.

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AN EXPERIMENTAL STUDY OF THE READING-RATE CONTROLLER

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For a number of years the use of various mechanical devices, such as the reading-rate controller, the metronoscope, the Harvard Reading Films, and the tachistoscope, for improving reading has been one of the most controversial subjects in the field of reading. Opinions on the topic range from completely favorable to wholly unfavorable. A large percentage of the studies published with regard to this subject deal with the use of the Harvard Reading Films and the metronoscope. While commercial representations concerning reading-rate controllers have increased, there has been practically nothing in the professional literature about the effectiveness of their use.

Most of the reports on the use of these devices (other than the reading-rate controller) have been quite favorable. They tend to indicate that fine results may be expected. Many of these studies have been well done; there is one aspect, however, which should be noted—in each case, experimental groups were compared only with control groups which had been given no training at all.

A report from Lauer, Henry, and Fritz (*5*), and one from Henry and Lauer (*4*), deviate from this pattern. These people, working with college students, compared four methods of improving reading, as well as comparing the experimental groups with a control group having no practice. (A mechanical device, the metronoscope, was used with only one of their experimental groups.) All their experimental groups showed definite improvement, with no one group significantly better than the others. These investigators concluded that any reasonable technique involving the reading function would result in improvement, and artificial devices may be more spectacular than useful.

In view of the claims made concerning the advantages of the reading-rate controller as a means for improving reading, more

[1] This study was the basis for a M.A. thesis done in the Department of Psychology at Ohio State University under the direction of Dr. John R. Kinzer.

data are needed. The study here considered, although carried out on a small scale, was set up in an attempt to gain some data of the type needed with regard to these more recent mechanical devices. We were directly concerned with the possible value of supplementary training on the reading-rate controller in conjunction with a course in effective study.

Reading is only one of several topics considered in this effective study course. (See Francis P. Robinson, *Effective Study*; this book is used as a basic workbook for the course.) The reading process and ways of improving reading are discussed in class after the students have read the project in *Effective Study*. Generally, three or four class periods (or portions of several periods) are set aside during the quarter for practicing speeded reading. Further consideration is then given to reading as it may be a part of other topics covered, such as the SQ3R (Survey, Question, Read, Recite, Review) method of study.

If students wish to work on improving their reading skills in addition to what is done in class, individual help may be obtained from the instructor. Some students may also obtain individual help from a graduate counselor. (Practicum training of counselors includes a period of counseling with students who are taking the Psychology 411 course.) In such cases, there is a reading-rate controller available for individual use if desired, as well as different types of practice reading material.

While improvement of reading is not, in itself, the major purpose of this effective study course, experience has shown that during a quarter (approximately ten weeks) a large percentage of the students can be expected to show some improvement. Changes in reading rate and comprehension are indicated by a comparison of test scores, particularly those obtained on two parallel Robinson-Hall Reading Tests which are given at the beginning and the end of the quarter. Knowing that some improvement could be expected, the question to be considered was whether or not greater improvement would be achieved if students were given training on the reading-rate controller in addition to the training received in the course.

PROCEDURE

All students taking Psychology 411 (Psychology of Effective Study and Individual Adjustment) during the spring quarter of

1950 were tested on the Robinson-Hall "Reading Test in History: Canada" during the first week of the quarter. After this, two groups of six students each were selected, on recommendation by the instructors of the several classes, from the large number who volunteered for the project. Lack of available facilities limited the size of the groups.

An attempt was made to set up matched groups. The problem of scheduling training periods for each of the students, however, and the difficulty encountered in trying to match the groups on the basis of the reading test score, made it evident that any matching could only be approximate. Consequently, for statistical purposes, the groups were treated as unmatched groups.

The training sessions were scheduled during a four-week period. Experimental Group A received three hundred forty-five minutes of training on the reading-rate controller in eleven half-hour sessions and one fifteen-minute session. Experimental Group B received three hundred fifteen minutes of training on the controller in ten half-hour sessions and one fifteen-minute session.

The device used was the reading-rate controller manufactured by the Three Dimension Company of Chicago, Illinois. (A description of the apparatus, the mechanics of operation, and the manner of preparing material can be found in the manual, *Reading-Rate Controller*, by Helen M. Robinson, Director of the University of Chicago Reading Clinic.) The reading material used consisted of book sections taken from various issues of the *Reader's Digest* and some Public Affairs Pamphlets.

Each half-hour session was divided into two reading periods of fifteen minutes each, with a five-minute interval between the two periods of reading. This allowed for a change of the rate setting on the controller within a session as well as from session to session. Times for increasing the rate setting were determined on the basis of the subject's report that he could keep up with the machine, or ahead of it, without difficulty, and an oral comprehension check. (The rate was increased only if the comprehension level as checked remained at seventy per cent or better.) Increments of increase in the rate setting were kept small—ten to fifteen words per minute. This allowed for more frequent increases, which it was believed would serve as a further motivating factor, and aided in keeping a running check on comprehension. Subjects were not told at what rate they were reading unless they inquired about it.

At the end of the training period, the twelve subjects, as well as all other students taking the course, were tested on the "Reading Test in History: Russia," a test form comparable to the pre-training test.[2] The scores from this test could then be compared with the scores obtained on the "Reading Test in History: Canada," the pre-training test, which provided a basis for comparisons both within the groups and between the groups. Scores on both these tests were available for a group of forty-eight students in these classes in addition to the twelve subjects in the two experimental groups. The former group was then considered as a control group to determine if those who had received training on the rate controller in addition to taking the effective-study course showed significantly greater changes in reading ability than those who took the course but had no supplementary training on the reading-rate controller.

RESULTS

Comparable pre-training and post-training scores on rate and comprehension were obtained by using two parallel reading tests from the Robinson-Hall series. With these scores, a comparison was made for the subjects within each group, and the means of the three groups were compared with each other. All differences were tested by the use of the t-test.

From an examination of the data thus obtained, the following conclusions may be drawn:

A) With regard to rate:

1) The gain in rate was significant at the two per cent level for the two experimental groups, and at the one per cent level for the control group.

2) Variability was greater on the posttest; the standard deviation was greater for the scores on the posttest in each group.

3) Decreases in rate were evident for only eight students, all of whom were included in the control group.

4) Comparing the mean gains in rate among the three groups, small differences were noted. None of these differences, however, was statistically significant.

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[2] For information on the comparability of these two tests, see the *Manual for the Robinson-Hall Reading Tests*, Ohio State University.

TABLE 1.—THIS TABLE SHOWS THE GROUP MEANS ON THE PRETEST AND POSTTEST FOR RATE AND COMPREHENSION

Group	Mean Test Scores			
	Rate (words per minute)		Comprehension (per cent right)	
	Pretest	Posttest	Pretest	Posttest
Experimental—A	189.83	237.83	69.33	63.50
Experimental—B	184.83	220.33	81.33	73.67
Control group	181.80	226.40	64.19	65.17

B) With regard to comprehension:

1) In each experimental group, one-half or more showed some decrease in score; nearly one-half of the control group also showed some decrease.

2) Variability within the group was less for the posttest than for the pretest; this was true in all three groups.

3) No clear pattern of relationship between amount of gain or loss in rate and amount of gain or loss in comprehension was noticeable.

SUMMARY

This brief study has been concerned with the possible value of supplementary training on the reading-rate controller in conjunction with a course in effective study. As measured by two parallel forms of the Robinson-Hall Reading Tests in History, most of the students taking the course showed some improvement in rate of reading. As a group, the mean difference in rate between the pretest and posttest was statistically significant ($P = .001$) for those who did not have additional training. There was no statistically significant difference in comprehension scores.

Students receiving additional training on the reading-rate controller also showed significant improvement ($P = .02$) in rate of reading. Again, there was no statistically significant difference in comprehension scores. Gains made by these experimental groups, however, were not significantly different from the gains of the control group.

In this case, no extra benefits seemed to accrue from additional training on the reading-rate controller, as used. The study sheds

some light on the possible value of using such a device in connection with a course where reading is treated only as one of several topics. Further investigation is needed, however, concerning the practical usefulness of these machines and the comparative effectiveness of different approaches to the problem of improving reading skills.

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RELATIONSHIPS BETWEEN EIGHT VARIABLES AND F-TEST SCORES OF TEACHERS

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Many investigators have concerned themselves with the problem of the organization of attitudes. Hartshorne and May (*1*), for example, have concluded that it is unjustifiable to consider honesty, service, and self-control as general characteristics of children, but rather that these traits are a function of the situation. On the other hand, Herrick (*2*) has drawn conclusions in favor of general attitudes of college students concerning social issues and matters of conduct. Gough (*3*) has found that the more antisemitic subjects in his samples are also characterized by lower intelligence, disadvantaged economic background, conservatism, and less sociability, to name but a few of the relationships discovered. Adorno and others (*5*) came to similar conclusions in their extensive study.

The present investigation is tangential to those mentioned above. The major interest here is in the factors related to certain attitudes. Struening (*4*), with university faculty members as subjects in a study similar to the present one, found a correlation of $-.45$ between attitude toward the church and F-test scores. Since low scores on the measure of attitude toward the church indicate favorable attitudes, the correlation indicates that the more favorable individuals on this continuum tend to be more authoritarian. In addition, Struening found that a favorable attitude toward the church was positively related to church membership. Another interesting finding was that the most favorable group was Catholics, then Protestants, and at the least favorable end of the continuum, Jews. This same order prevailed in F-Test scores, with Catholics at the more authoritarian end of the continuum. An attempt is made in this study to determine the relationships, if any, between scores of elementary- and secondary-school teachers on the Social Attitude Scale of Adorno et al (*5*)

and nine other variables. The ten variables are as follows:

1) Scores on the Social Attitude Scale or F-test or SAS (*5*)

2) Scores on the Sim's Social Class Identification Scale, or SCI (*6*)

3) Attitude toward the church, as measured by the Kelley-Remmers Scale of Attitude toward Any Social Institution, or SAI (*7*)

4) Sex (weighted 0 for male, 1 for female)

5) Age

6) Church attendance (weighted 0, 1, 2, and 3 for increasing frequency of attendance)

7) Home discipline (weighted 0 and 1 for lenient and strict, respectively)

8) Political party preference, or Pol. (weighted 0, 1, and 2, for Republican, Democrat, and Independent, respectively. An assumption is made here for correlational purposes that a continuum is represented by the order of code numbers.)

9) Race (weighted 0 for white, 1 for Negro)

10) Religion (Protestant, Catholic, or Jewish)

COLLECTION AND ANALYSIS OF DATA

The data were collected from one hundred eighty graduate students in education at the University of Southern California in July 1952. Practically all of the members of the group were teachers or school administrators. All intercorrelations among the variables were computed, and three multiple correlations with F-test score as the dependent variable were calculated. The three multiple correlations were for Protestants, Catholics, and for the total sample, including Protestants, Catholics, and Jews. A separate multiple correlation for the Jewish sample was ruled out due to the small sample size ($N = 8$).

INTERPRETATIONS AND CONCLUSIONS

1) It must be remembered that the correlations presented are probably underestimates of the population parameters, since the group was extremely homogeneous. As concerns the curvilinearity of the church attendance variable, Table 4 indicates that none of the etas were significantly greater than the original correlation between the same two variables.

2) Although the mean scores of Catholics do not differ significantly from those of Protestants on any variable, and despite the fact that the correlation matrices for these two groups are very similar, still the multiple correlation for the Catholic sample is significantly greater than that for the Protestant group at far beyond the one per cent level.

3) An eta of .248 between frequency of church attendance and SAS scores for the total sample is found in Table 1. In addition, the eta representing the relationship between frequency of church attendance and attitude toward the church is found to be .290. These etas are both statistically significant, at better than the one per cent confidence level. This investigation, then, has substantiated Struening's findings, mentioned above, with regard to the correlation of church attendance with both attitude toward the church and authoritarianism scores. In Table 1 the correlation between F-test scores and attitude toward the church is also found to be significantly large.

TABLE 1.—CORRELATION MATRIX FOR TOTAL SAMPLE

	SCI	SAI	Sex	Age	Church	Home	Pol.	Race
Soc. Att. Scale	.024	.161†	.044	.003	.193*	.122	−.174†	.168†
Soc. Class Inv.		.226*	.263*	−.220*	.004	.051	−.170†	−.119
Att. to Church			.142	−.038	.281*	.011	−.033	.031
Sex				.288*	.172†	.199*	.001	.080
Age					.006	.132	.053	.060
Church Attend.						.120	−.173†	.180†
Home Discip.							−.055	.052
Polit. Pref.								.122

* Significant at the 1 per cent level.
† Significant at the five per cent level.

TABLE 2.—MULTIPLE CORRELATIONS OF ALL VARIABLES WITH SAS

	R 1.23456789	σ_r
Protestants (N = 145)	.323*	.075
Catholics (N = 27)	.694*	.102
Total (N = 180)	.330*	.067

* Significant at the one per cent level.

TABLE 3.—MEANS OF ALL VARIABLES AND STANDARD DEVIATIONS OF CONTINUOUS VARIABLES

	SAS	SCI	SAI	Age	Sex	Church	Home	Pol.	Race
Protestant (N = 145)									
Mean	−16.85	19.54	9.33	34.06	.26	1.26	.61	.70	.04
SD	21.54	4.83	1.77	7.14					
Catholic (N = 27)									
Mean	−12.93	19.85	9.44	33.63	.37	2.07	.63	.59	.15
SD	21.65	5.42	1.86	6.81					
Total (N = 180)									
Mean	−17.09*	19.56	9.26	33.86	.26	1.34	.59	.72	.06
SD	22.08	4.91	1.85	7.04					

* Jewish group pulled mean for total sample in a negative direction.

TABLE 4.—SIGNIFICANCE OF DIFFERENCES BETWEEN LINEAR CORRELATIONS AND ETAS FOR CHURCH ATTENDANCE VS. FOUR NON-CODED VARIABLES

	Linear r	Eta	P
Protestants (N = 145)			
Church vs. SAS	.111	.209	> .05
Church vs. SAI	.287	.289	> .50
Church vs. SCI	.025	.187	> .05
Church vs. AGE	−.023	−.107	> .30
Catholics (N = 27)			
Church vs. SAS	.437	.477	> .30
Church vs. SAI	.099	.215	> .50
Church vs. SCI	−.229	−.251	> .50
Church vs. AGE	.087	.136	> .50
Total (N = 180)			
Church vs. SAS	.193	.248	> .05
Church vs. SAI	.281	.290	> .50
Church vs. SCI	.004	.146	> .10
Church vs. AGE	.006	.079	> .50

Other evidence derived from the statistical analysis points in the same direction. Regression equations for Catholics and Protestants were computed from the correlation matrices. It was found that the most heavily weighted factor for predicting F-test scores for the Catholic sample was frequency of church attendance. The most heavily weighted factor for the Protestant sample was race. Attitude toward the church and frequency of church attendance ranked fourth and seventh, respectively, in this regard. This is indirect substantiation of Struening's finding that Catholics ranked higher than Protestants in scores on the F-test.

4) There are three possible explanations for these findings. First, persons who are authoritarian may find that some of their needs are satisfied by affiliation with the church. The second explanation might be that the education one receives through the medium of the church is authoritarian in character, and that this education carries over into other areas of life. Third, there may be an independent third factor which influences both authoritarianism scores and attitudes toward or membership in the church. Further research needs to be directed at these alternative hypotheses.

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HOSTILITY: AN EDUCATIONAL PARADOX

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Investigators of hostility have been primarily concerned with prejudiced people, anti-minority feelings, or ethnocentrism. This bias of investigation has precluded the possibility of analyzing hostility *per se*, devoid of special targets. We are concerned with the 'pattern of hostility', regardless of the particular target. Once we construct a systematic theory of hostility clarification of target specificity will readily follow. We are not interested in which target is most or least liked, but, given the rank order of any group of targets, how hostility is patterned.

We postulate that action is dependent upon intellectual and emotional forces. Rather than try to test such a broad thesis, we concentrate upon the hostile act as dependent upon both information and attitude. Should this be systematically demonstrated, social behavior theory may be anchored in a general theory of behavior. This paper presents data which cross-validate our hypothesis.

Instruments were developed to measure subjects' verbal reactions to various catastrophes in terms of the amount of information they felt they had about them, their attitude toward them, and the amount they felt threatened by them. Empirical results of hostile attitudes toward nations indicated that one has to feel one has some knowledge about objects in order to be hostile toward them. (*1*)

METHOD

The instruments prepared for this study offer a method of test construction which is easily administered and has high reliability. Modified paired comparison and Likert scaling techniques are combined to yield a flexible instrument which measures both direction and intensity of attitude. The test may be machine scored. It may be applied to preference inventories, attitude scales, or sociometrics.

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[1] Milton R. Canfield, Iowa State College, and James F. Guyot, Michigan State College, coöperated on this study.

Subjects were sixty undergraduate students at the University of Illinois and Michigan State College.

Eleven catastrophes were selected on the basis of their diversity, likelihood of occurrence, familiarity, etc. They were: anemia, cancer, diabetes, heart attack, leprosy, nervous breakdown, pneumonia, poliomyelitis, syphilis, traffic accident, and tuberculosis.

For every pair in each inventory the subject marked a preference for one catastrophe (or indifference) to complete one of the following statements:

I have greater dislike for . . . . than . . . .
I have more accurate knowledge and information about . . . . than . . . .
I feel more threatened by and fearful of . . . . than . . . .

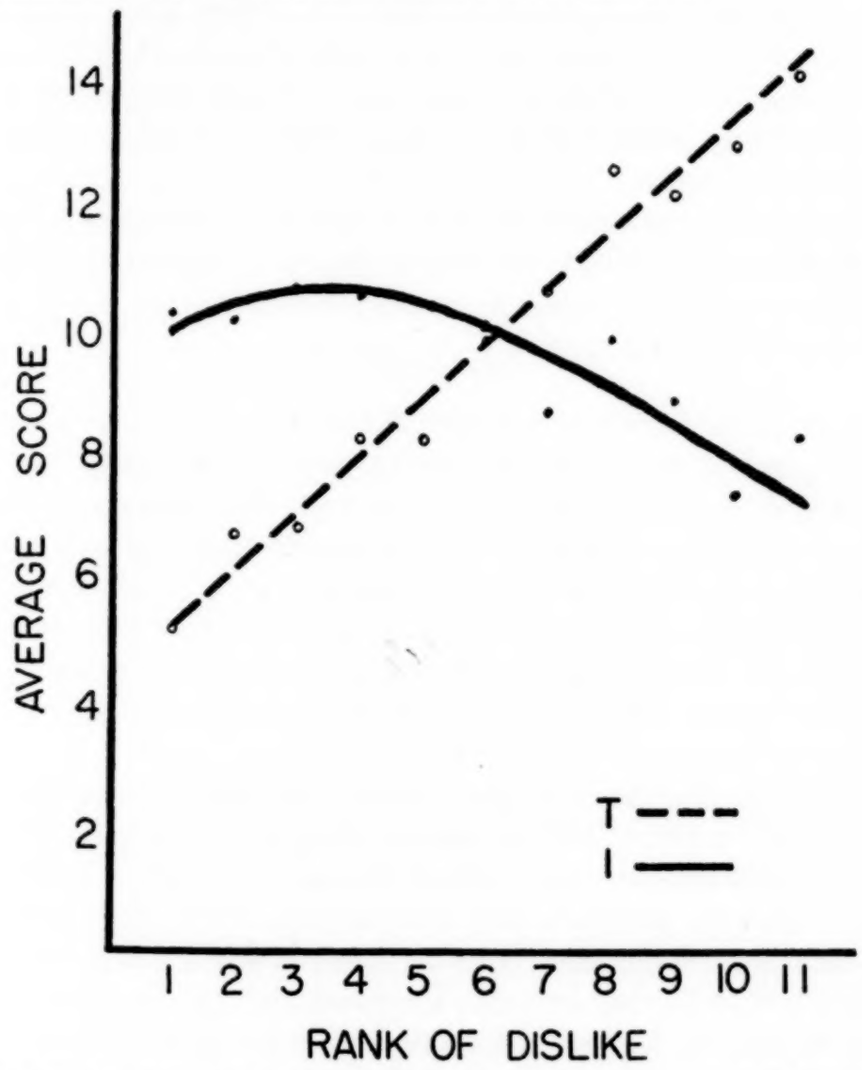

FIGURE 1.—Average Scores for Threat (T) and Assumed Information (I) According to the Rank Order of Dislike.

An item might look like this:

ANEMIA more about equal more CANCER

The subject marked his choice on an IBM answer sheet. Each catastrophe was scored separately. Two points were given for every 'more' answer and one point for an 'about equal' answer.

RESULTS

The intensity scores for each stimulus were plotted on the corresponding ranks to check linearity. The dislike and information stimuli were both linear, but the threat was curvilinear.

Stimuli were ranked in order of dislike for each subject. Rank one might include several stimuli, for different subjects selected various catastrophes as most disliked. The information scores for the attitude stimuli classified on the basis of ranks of dislike were determined and plotted. The hostility (threat) scores for these stimuli were similarly determined and plotted. The smooth curves are shown in Figure 1.

The data indicate a curvilinear relationship between assumed information and dislike. Threat is directly, linearly related to dislike.

DISCUSSION

The data on threat and dislike differ somewhat from data on hostility and liking. Curvilinearity appears in both cases, but the direction of the curve is reversed. This difference may be attributable to the different items (nations or catastrophes), or to different instructions (hostility or threat, like or dislike). We favor the latter explanation. It is corroborated by the sociometric analyses in which one finds differences in the distributions of positive and negative choices. Liking may not be the antonym of disliking, nor hostility of threat.

Another explanation is that these differences represent two patterns of hostility. Let us assume they are. Then, if it is our task to educate persons with regard to a set of stimuli, it is entirely possible that our program may have serious effects upon hostility. The more information one feels he receives about things he likes, the less hostile he may become; the more that he thinks he knows about things he dislikes, the more hostile he may become. Conversely, we feel we have greater information about stimuli which

we consider moderately threatening to us, those which we feel do not threaten us and those which threaten us severely we feel less informed about. In either case the effect of additional information will not be linear.

This may explain some of the boomerang effects in our educational efforts. Information behaves like so much ammunition when our dislikes are strong. When we are under threat we may not even perceive additional information. Before we can predict the outcome of a program of hostility or threat reduction we must first ascertain the pattern upon which our efforts of change are to be exerted. Otherwise we are apt to increase the feelings of hostility and not affect threat in the least. The paradigm of hostility has a wide range of basic and applied research possibilities and offers a solution to a practical paradox in education. Guiding hypotheses for future research are:

1) Hostility (threat) is dependent upon the relationship between an individual's attitude toward a class of stimuli and the amount of information he feels he has about it.

2) The pattern of hostility may be changed by altering either attitude or amount of information, or both of these variables.

3) The ease and significance of changing a pattern of hostility depend upon the pattern held and its generality to other stimuli.

SUMMARY

The genesis of a systematic theory of hostile behavior is presented. Hostility is considered as the resultant of attitude and assumed information. A method for the study of hostility patterns is described. Results indicate that the relationship between attitude and assumed information is curvilinear. The educational implications of this curvilinearity are discussed.

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1) Harry A. Grace and Jack Olin Neuhaus. "Information and social distance as predictors of hostility toward nations," *J. abnorm. soc. Psychol.*, 1952, 47, 540–545.

BOOK REVIEWS

JEROME M. SEIDMAN. Editor. *The Adolescent: A Book of Readings.* New York: The Dryden Press, 1953, pp. 798. $4.50.

Sixty-seven selections, in six parts and twenty-two 'chapters' may or may not be worth four dollars-and-a-half of an undergraduate's money. Aside from its binding and paper (which in this case are below average) the value of a book lies in its content. In an anthology the content depends upon the care and wisdom with which the editor has sampled the field, and upon the degree of integration he is able to achieve with his comments and organization. Finally, the sample of content depends upon the population of content.

Perhaps it is this last point which is the key to Seidman's *The Adolescent: A Book of Readings.* Every discipline which deals with human beings might touch upon the particular class of them which is called 'adolescents'. In fact, Dr. Seidman has included—as a kind of horrible sample—one short piece which is from no scholarly discipline at all, but which belongs, rather, to the profession of journalism. It is called "How To Be a Woman," and "although the reader may derive some insight from it, he will, of course, recognize that this article is written on a popular rather than a scientific level." To criticize adversely on the basis of these three pages would be unfair except that they illustrate what seems to this reviewer an excessively catholic taste. Anthropometry, anthropology, education, physiology, psychoanalysis, psychology and sociology are all represented. The selections range from the severely empirical and methodological paper of Gough and Peterson ("The Identification and Measurement of Predispositional Factors in Crime and Delinquency") through a labored excerpt from Lewin that strains to describe the problems of this period in field-theoretical terms, to the provocative but very interpretive observations of Margaret Mead and Caroline Zachry. In short: the sample is too broad and too shallow. Too broad, because most undergraduates will be unable to put many of the unrelated selections into any perspective at all. Too shallow, because so much breadth has been attempted that not enough information about any single problem can be included.

Some of this difficulty results from a population of writings

defined in terms of subjects rather than subject matter. The implication is that adolescents are a breed apart, which is doubtful. On the other hand their parents may well agree, and in any event the catalogues of many colleges and universities make this concession to student interest. But there is then no reason to include materials which deal with quite different topics and ages. Among these are Oscar Lewis' "Husbands and Wives in a Mexican Village," Gordon Allport's "The Resolution of Intergroup Tensions," and Murray and MacKinnon's "Assessment of OSS Personnel."

To the foregoing general, or principled, objections must be added another which is the occupational hazard of the anthologist: why one particular choice and the omission of another? Individual differences of opinion of this sort combined with the fundamental difficulty in the scope of the collection will cause many an instructor to think long and hard before asking his students to buy it. No instructor would assign all of it, but any instructor will find at least some things he would like all of his students to read. Whether many will find enough to justify the addition to their students' financial load is hard to say.

JOHN P. MCKEE

University of California

CHARLES E. OSGOOD. *Method and Theory in Experimental Psychology*. New York: Oxford University Press, 1953, pp. 800. $10.00.

Following the large Handbook of Murchison (1934) and the much more recent volume edited by Stevens, we have here another monumental and detailed discussion of experimental psychology. The author states that his principal purpose is to provide a "text that evaluates experimental literature in close relation to critical theoretical issues." The attempt has been "to provide an interpretive framework that both brings out the significance of existing research and directs the reader's thinking toward as yet unsolved problems that need further research." It is presented both as a text and as a book of reference. "Although the coverage is extensive, it is also selective." To overcome "the potential disadvantage of single authorship," the author submitted many chapters "to one or more experimentalists who are experts in the fields concerned." (v).

There are four parts into which the subject matter has been divided. Part 1, Sensory Processes, includes, sensory quality, sensory intensity, audition and vision; Part 2, Perceptual Processes, includes, the nature of perceptual organization, projection dynamics in perception, and central dynamics in perception; Part 3, Learning, deals with fundamental operations in learning, theories of learning, certain controversial issues in learning theory, neurophysiology of learning, serial and transfer phenomena, and retention; Part 4, Symbolic Processes, discusses problem-solving and insight, thinking, and language behavior.

According to the preface this work is the result of about ten years of effort given primarily to this project. It has the unity that the thinking of a single individual can give to it. If one looks for the report of a certain experiment it may not be found. But on the whole, critical judgment must recognize the magnitude of the contribution in which so much of experimental results and theoretical considerations have been collected and interwoven into a well-organized presentation. Stress was made upon those studies that seemed to be most pertinent to the theoretical issues. In general the selection has been excellent and the advanced student of psychology will find a thoroughly valuable contribution to the understanding of the subject in its present stage of development.

The critical student will perhaps be helped to see the generally unsatisfactory nature of theoretical explanations as they exist today, and to realize the need for much more fundamental research for the best progress of the science. Not only this, but he may find definite suggestions for the planning of much needed research.

One of the valuable contributions of the volume lies in the inclusion of certain material not before brought together in a single book, such as synaesthesia, certain material in connection with problem-solving and transfer, and in relation to language behavior and communication.

Students of educational psychology should find valuable contribution to their thinking especially in connection with the discussions of learning, transfer, problem-solving, thinking and language behavior. They might also be helped to recognize the fact that theoretical explanation based on insufficient experimental data has been inadequate in psychology and too often carried over into unsatisfactory educational theory. And, perhaps again, they

may be helped to see that theory which conflicts with physiological or neurological facts already known, is to be very carefully avoided.

The book will be found to be especially valuable for reference work. The bibliography and author index contains 1290 citations. The subject index is well made and extensive, pages 781–800. A large number of figures and graphs add to the interest and clarity of the presentation.

This is one of the decidedly valuable contributions to psychology. It is scholarly, generally clear in statement, and without too many complicated and difficult definitions. It may be expected for a long time to be an indispensable book especially for advanced students and as a reference for both student and instructor. For any who may be inclined to despair because of the various isms and ologies within psychology, this contribution may help them to see that psychology has been developing out of the 'psychologies' and that, as in other sciences, the good will be sifted out from the bad, so that a sound psychology will be established and will prevail over the part-psychologies and the pseudo-psychologies that may have been inevitable outbreaks in the development of the science.

The author and publisher are to be congratulated.

A. S. Edwards

The University of Georgia

Robert Lindner. *Prescription For Rebellion.* New York: Rinehart and Company, Inc., 1952, pp. 305. $3.50.

If to improve mankind is our goal, what the world needs is to abandon the fallacy of adjustment and cultivate instead an appreciation for the indispensability of its alternative—positive rebellion as a pattern and way of life. This, in essence, is the theme of Lindner's *Prescription for Rebellion.* Admittedly, the volume is designed to sound an alarm. The content of the volume he presents under two sections: Book One, called Diagnosis, is composed of six chapters captioned as follows: The Lie that Binds; Shamans and Shibboleths; The Eleventh Commandment; Rebel's Fate; Adjustment—Causes and Consequences (1) History from a New Dimension; Adjustment—Causes and Consequences (2) The Antagonist. Book Two is called Prescription and includes four chapters, each called The Revolutionist's Handbook. The so-called

diagnostic chapters contain more startling and surprising subject matter and interpretations. The chapters on prescription are mild by comparison.

The book, advises the author, represents a feeble attempt on his part to write a prescription for living for use by all. No one reading the book will consider it a feeble attempt. The book is written in strong language and it is more than outspoken—it is often condemnatory of many of the things considered to be proper now-a-days in the field, and is written with seeming aim to disturb and upset people into action and get them tense enough to express interest in doing something about it. A cult of passivity and surrender is exactly what he is fighting against and he fights openly and strongly. For the first many chapters, the book sounds more like that written by a prophet of doom or the chronicler of psychological disaster than one who is making a feeble attempt. The very first sentence of the prologue is illustrative. It reads "the plight of modern man is pitiful . . . Now, with this knowledge in his grasp, he finds it being misunderstood or conscientiously misapplied. If ever there was cosmic tragedy, this is it." This error of prescribing for adjustment, in his words, amounts to a literal perversion of a most important, if not the most important, area of knowledge to an instrument for the continued debasement, exploitation and enslavement of man.

Antagonists with good professional status, he has many. He particularly picks on Franz Alexander for what he considers to be his emphasis in therapy, namely, domestication; Karen Horney for representing only the upholding of feminine psychology; Harry Stack Sullivan for seeming to be too satisfied with happiness based on conformity and, in that sense, being an advocate of reaction; Carl Rogers, whose non-directive psychotherapy he refers to as a "potpourri of ventilation, reassurance, insight and will therapy." He is even more vehemently opposed, and spends more time considering with hostility, what he refers to as the 'shockiatrists'. He is also critical of psychosurgery and its undiscriminating use, particularly. But he does have some protagonists. He reacts favorably to Abraham Myerson, Bertrand Russell, Norbert Weiner, Roland S. McCullough. And, after damning many psychoanalysts, he comes out with the conclusion that the most effective of all psychotherapeutic tools for accomplishment of the aim of treatment is psychoanalysis. But he adds that the

analyst has to assume the responsibility for the philosophy with which the patient leaves his analysis, and that the philosophy should be that of rebellion on which the fundamental premise derives from the last three attributes of the rebellious person: responsibility, employment and tension.

That adjustment is not necessarily a criterion of a good life, a wholesome personality or integrity, is not exactly a new concept in the field of mental hygiene. William Healy, psychiatrist, Clifford Shaw, sociologist, and other students of delinquency have often differentiated between integration as against adjustment, and have written at length that adjustment to the exploited surroundings of a delinquency area does not represent good mental health, but merely means conforming to delinquency. It probably is a fact that all too often in the more academic texts, adjustment has been described in a manner which justified criticism, but whether this justifies this kind of alarming consideration is a question mark. The end in view is to some extent justified; the means are extremely questionable. But, regardless, this is an interesting book to read, which emphasizes the attitude that is deserving of some attention, although it is expressed in over-generalized, exaggerated, and over-revolutionary terms. As such, it can make for valuable reading if taken as an expression of protest rather than as a statement of facts.

H. Meltzer

Psychological Service Center
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Carl A. Whitaker and Thomas P. Malone. *The Roots of Psychotherapy*. New York: The Blakiston Company, 1953, pp. 236.

In *The Roots of Psychotherapy* two professors from Emory University's department of psychiatry, one a Ph.D. and one an M.D., make an attempt to develop a frame of reference to serve as a basis for considering features of the treatment process which are common to all forms of psychotherapy regardless of differences in techniques or in original orientation. This they do on the assumption that in recent years psychotherapy has become more and more a separate discipline dealing with a recognizable process. The content of the book is presented in three large sections: Foundation, Process, and Techniques. The section on Foundation considers the biological

basis of psychotherapy, implicit and explicit psychotherapy, and dynamic psychiatry and psychotherapy. The section on Process includes chapters on the patient as a person, the process of psychotherapy, anxiety and psychotherapy, the therapist as a person, patient-vectors in the therapist, and restatement of the problem of psychotherapy. In the section on Techniques are presented some of the techniques found useful by the authors. The book is intended to be for anybody, no matter what his training, who has the experience of treating patients or who has been a patient himself. The impression the authors express in the preface is that such people should have little difficulty comprehending the essential meaning of the book. The book contains a glossary of terms as well as a bibliography, but does not contain an index.

Of interest to clinicians will be the chapter on some techniques in brief psychotherapy. Here will be found a brief consideration of the various stages of therapy—beginning phase, symbolic phase, and ending phase. Here too they will find a consideration of techniques of administration in therapy. Technique is defined by them as "an interpersonal operation deliberately used by the therapist, the function of which is to transpose social, latent affect in both participants into deeper, manifest affect in order to catalyze the affective and symbolic process of psychotherapy." This may be a good definition, but not easily understood by a layreader. Presented here also are techniques for expanding the fantasy component of therapy, this on the contention that adult oriented fantasy frameworks are less significant as methods of communication than are the symbolic forms which the culture provides. Also considered in brief are pitfalls of psychotherapy.

The authors show a ready familiarity with not only psychiatric and psychological literature but also related philosophical literature. Illustrative references include the writings of Rank, Ruesch, Schilder, H. S. Sullivan, Kubie; Rogers, Lewin, and Piaget; and Einstein, Morris Cohen, Bridgeman, and Whitehead. Sane and professionally sound the book is. An honest attempt to build up and develop a frame of reference for consideration of therapy for practice and in research purposes it also is. And valuable to professional therapists it can be. For popular purposes the writing just isn't clear enough, particularly in the early chapters.

H. MELTZER

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FRANCES LLOYD. *Educating the Sub-normal Child.* New York: Philosophical Library, 1953, pp. 148. $3.75.

JOHN C. TOWNSEND. *Introduction to Experimental Method.* New York: McGraw-Hill Book Company, 1953, pp. 220. $4.00.

Here are two books interested on very different levels in the educational methods outlined and recommended for the two kinds of problems: the one, for backward and subnormal children; the other, in the teaching of college students in the highest method of learning known to the human mind; namely, learning by experiment. Both books have significant agreement in one of the fundamentals of teaching, that of getting the learner to participate actively in the learning.

Lloyd reports work that she has been doing in a special school which the Foreword maintains is "an ordinary school and not a show school of the type to which authorities like to direct visitors." (p. v).

The information and discussions include the problem of the criterion by which E. S. N. (educationally sub-normal) children should be selected for special school treatment; social background and attitudes of parents; social training in the special school; misfits in the special E. S. N. school; activities in the special E. S. N. school; what success means in this kind of school; and three case studies.

The value of the book lies not in the fact that there is anything particularly new reported; but rather in the brief story of what appears to be excellent work in an English school on this difficult level of education. It may also add to the encouragement of those who are now in many places considering the organization of such schools or classes, and who desire to know the judgment of one who has had long experience in the work.

In the midst of what seems to be useful information and good educational judgment, there are amazing statements about IQ's. The IQ of one of the cases was reported as 42 at the age of seven, and 89 at the age of twelve. (p. 81). And a 'doctor' was reported (p. 82) as suggesting that under proper conditions, the IQ might rise another twenty points! One wonders what psychological examination was used; what was the competence of the examiner; and particularly, was the child in proper condition when he was examined so that it was possible to obtain an accurate mental age

and intelligence quotient? Especially, we should like to know if the author means to say that the methods of the school actually raised an imbecile so near to the intelligence of a normal child. If this can be done, educators will want to know a great deal more about the methods used in this school.

A useful index completes the book.

Quite as important, and for very different reasons, is the volume of Townsend. Its contribution is not to teaching in one or a few of the sciences, but in all fields of science. Its purpose is to demonstrate how to get away from 'cook-book' methods, away from mere following of instructions, to insight and actual participation in the performing of scientific experiments.

"The emphasis in this book is placed on preparing the student to think along lines of the development of sound research designs rather than the successful execution of standardized traditional experiments. In this way, it is believed that the beginning student may be exposed to the elements of theory and method necessary for the understanding of the performance of experiments. Equally important, the student will be given opportunity to become sensitive to the ways of critical thinking early in his contact with science and not be forced to labor in darkness and boredom until he becomes a graduate student." (p. vii).

The main parts of the book include theory of experimentation; design and conduct of experiments; interpretations and conclusions; and applications of the experimental method.

In such a book there is the very difficult problem of selection of material, especially, since it is a relatively new kind of book. In its ensemble it is new. In detail it considers scientific versus non-scientific procedure; the locating and simplifying of problems; hypotheses and variables; control of the experiment and use of apparatus; the conducting of the experiment; the use of logic and of statistics; the making of the report including the making of tables, but not enough about the making of tables; pictures and brief descriptions of apparatus; and the appendix includes four of the most commonly used statistical tables.

It is easy to point out details which one would suggest for inclusion in the volume. The reviewer is inclined to think that the book would be more interesting and useful to the student if there were more concrete psychological subject matter to balance the amount of abstract and methodological material. From one point of

view the book is more useful to the instructor than to the student because the instructor already has the concrete material on the basis of which the logic and methodology can be thought out. The instructor can supply the concrete material and may do so by using a supplementary text. Except for some mention of apparatus there is practically nothing in the book relating to animal psychology.

It is believed that the book is genuinely useful for the purpose of helping the student to learn science in place of suffering continued demand to follow instructions which he has been doing from the nursery school up. It is also believed that the use of such methods as proposed by Townsend could vastly improve the teaching of science in all departments of colleges and universities; and a somewhat simple application could be made to improve science teaching in the high schools. But it will need more concrete subject matter material.

The book concludes with a useful index, pp. 215–220.

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